**IN THE CLAIMS**

1-46 (canceled)

47. (previously presented) A method of stimulating stem cell proliferation comprising contacting hematopoietic cells with a stem cell proliferation stimulating amount of INPROL or an opiate compound or a stem cell proliferation stimulating amount of a combination of INPROL and an opiate compound,

wherein said INPROL is selected from the group consisting of

a polypeptide having the sequence of amino acids 1-97 of the human alpha hemoglobin chain,

a polypeptide having the sequence of amino acids 1-94 of the human alpha hemoglobin chain,

Phe-Pro-His-Phe-Asp-Leu-Ser-His-Gly-Ser-Ala-Gln-Val (SEQ ID NO:1),

Cys-Phe-Pro-His-Phe-Asp-Leu-Ser-His-Gly-Ser-Ala-Gln-Val-Cys (SEQ ID NO:2)

(where the two Cys residues form a disulfide bond),

Asp-Ala-Leu-Thr-Asn-Ala-Val-Ala-His-Val-Asp-Asp-Met-Pro-Asn-Ala-Leu-Ser-Ala (SEQ ID NO:3),

Phe-Leu-Gly-Phe-Pro-Thr (SEQ ID NO: 33),

Leu-Val-Val-Tyr-Pro-Trp-Thr-Gln-Arg-Phe (SEQ ID NO:4),

Leu-Val-Val-Tyr-Pro-Trp-Thr-Gln-Arg (SEQ ID NO:5),

Leu-Val-Val-Tyr-Pro-Trp-Thr-Gln (SEQ ID NO:6),

Leu-Val-Val-Tyr-Pro-Trp-Thr (SEQ ID NO:7),

Leu-Val-Val-Tyr-Pro-Trp (SEQ ID NO:8),

Leu-Val-Val-Tyr-Pro (SEQ ID NO:9),

Val-Val-Tyr-Pro-Trp-Thr-Gln (SEQ ID NO:10),

Tyr-Pro-Trp-Thr-Gln-Arg-Phe (SEQ ID NO:11),

Tyr-Pro-Trp-Thr-Gln-Arg (SEQ ID NO:12),

Tyr-Pro-Trp-Thr-Gln (SEQ ID NO:13), and

Tyr-Pro-Trp-Thr (SEQ ID NO:27);

wherein said stem cells are cells which can generate multiple lineages or other stem cells.

48. (previously presented) A method as in claim 47 wherein said INPROL is selected from the group consisting of

a polypeptide having the sequence of amino acids 1-97 of the human alpha hemoglobin chain, and

a polypeptide having the sequence of amino acids 1-94 of the human alpha hemoglobin chain.

49. (previously presented) A method as in claim 47 wherein said INPROL is selected from the group consisting of peptides having the sequence:
Phe-Pro-His-Phe-Asp-Leu-Ser-His-Gly-Ser-Ala-Gln-Val (SEQ ID NO:1),
Cys-Phe-Pro-His-Phe-Asp-Leu-Ser-His-Gly-Ser-Ala-Gln-Val-Cys (SEQ ID NO:2)
(where the two Cys residues form a disulfide bond),
Asp-Ala-Leu-Thr-Asn-Ala-Val-Ala-His-Val-Asp-Asp-Met-Pro-Asn-Ala-Leu-Ser-Ala (SEQ ID NO:3),
Phe-Leu-Gly-Phe-Pro-Thr (SEQ ID NO:33),
Leu-Val-Val-Tyr-Pro-Trp-Thr-Gln-Arg-Phe (SEQ ID NO:4),
Leu-Val-Val-Tyr-Pro-Trp-Thr-Gln-Arg (SEQ ID NO:5),
Leu-Val-Val-Tyr-Pro-Trp-Thr-Gln (SEQ ID NO:6),
Leu-Val-Val-Tyr-Pro-Trp-Thr (SEQ ID NO:7),
Leu-Val-Val-Tyr-Pro-Trp (SEQ ID NO:8),
Leu-Val-Val-Tyr-Pro (SEQ ID NO:9),
Val-Val-Tyr-Pro-Trp-Thr-Gln (SEQ ID NO:10),
Tyr-Pro-Trp-Thr-Gln-Arg-Phe (SEQ ID NO:11),
Tyr-Pro-Trp-Thr-Gln-Arg (SEQ ID NO:12),
Tyr-Pro-Trp-Thr-Gln (SEQ ID NO:13), and
Tyr-Pro-Trp-Thr (SEQ ID NO:27).

50. (previously presented) A method as in claim 47 wherein said opiate compound is selected from the group consisting of morphine, etorphine, codeine, heroin, hydromorphone, oxymorphone, levorphanol, levallorphain, hydrocodone, oxycodone, nalorphine, naloxone, buprenorphine, butanorphanol, nalbuphine, meperidine, alphaprodine, diphenoxylate, fentanyl, (D-Ala$^2$,N-Me-Phe$^4$,glycinol$^5$)-Enkephalin, (D-Arg$^2$,Lys$^4$)-Dermorphin (1-4) amide and nociceptin.

51. (previously presented) A method of stimulating stem cell proliferation comprising contacting hematopoietic cells with a stem cell proliferation stimulating amount of a compound capable of binding opiate receptors, wherein said stem cells are cells which can generate multiple lineages or other stem cells.

52. (original) A method as in claim 51 wherein said compound has selectivity for the mu subclass of opiate receptor.

53-90 (canceled)

91. (previously presented) The method of claim 49, comprising contacting hematopoietic cells with a stem cell proliferation stimulating amount of Phe-Pro-His-Phe-Asp-Leu-Ser-His-Gly-Ser-Ala-Gln-Val (SEQ ID NO:1).

92. (previously presented) The method of claim 49, comprising contacting hematopoietic cells with a stem cell proliferation stimulating amount of Cys-Phe-Pro-His-Phe-Asp-Leu-Ser-His-Gly-Ser-Ala-Gln-Val-Cys (SEQ ID NO:2) wherein the two Cys residues form a disulfide bond.

93. (previously presented) The method of claim 47, comprising contacting hematopoietic stem cells with a stem cell proliferation stimulating amount of Phe-Pro-His-Phe-Asp-Leu-Ser-His-Gly-Ser-Ala-Gln-Val (SEQ ID NO:1).

94. (previously presented) The method of claim 47, comprising contacting hematopoietic stem cells with a stem cell proliferation stimulating amount of Cys-Phe-Pro-His-Phe-Asp-Leu-Ser-His-Gly-Ser-Ala-Gln-Val-Cys (SEQ ID NO:2) wherein the two Cys residues form a disulfide bond.

95. (currently amended) A method of stimulating stem cell proliferation comprising contacting stem cells with a stem cell proliferation stimulating amount of INPROL or an opiate compound or a stem cell proliferation stimulating amount of a combination of INPROL and an opiate compound,

wherein said INPROL is selected from the group consisting of

a polypeptide having the sequence of amino acids 1-97 of the human alpha hemoglobin chain,

a polypeptide having the sequence of amino acids 1-94 of the human alpha hemoglobin chain,

Phe-Pro-His-Phe-Asp-Leu-Ser-His-Gly-Ser-Ala-Gln-Val (SEQ ID NO:1),

Cys-Phe-Pro-His-Phe-Asp-Leu-Ser-His-Gly-Ser-Ala-Gln-Val-Cys (SEQ ID NO:2)

(where the two Cys residues form a disulfide bond),

Asp-Ala-Leu-Thr-Asn-Ala-Val-Ala-His-Val-Asp-Asp-Met-Pro-Asn-Ala-Leu-Ser-Ala (SEQ ID NO:3),

Phe-Leu-Gly-Phe-Pro-Thr (SEQ ID NO:33),

Leu-Val-Val-Tyr-Pro-Trp-Thr-Gln-Arg-Phe (SEQ ID NO:4),

Leu-Val-Val-Tyr-Pro-Trp-Thr-Gln-Arg (SEQ ID NO:5),

Leu-Val-Val-Tyr-Pro-Trp-Thr-Gln (SEQ ID NO:6),

Leu-Val-Val-Tyr-Pro-Trp-Thr (SEQ ID NO:7),

Leu-Val-Val-Tyr-Pro-Trp (SEQ ID NO:8),

Leu-Val-Val-Tyr-Pro (SEQ ID NO:9),

Val-Val-Tyr-Pro-Trp-Thr-Gln (SEQ ID NO:10),

Tyr-Pro-Trp-Thr-Gln-Arg-Phe (SEQ ID NO:11),

Tyr-Pro-Trp-Thr-Gln-Arg (SEQ ID NO:12),

Tyr-Pro-Trp-Thr-Gln (SEQ ID NO:13), and

Tyr-Pro-Trp-Thr (SEQ ID NO:27);

wherein said stem cells are cells which can generate multiple lineages or other stem cells.

96. (previously presented) A method as in claim 95 wherein said INPROL is selected from the group consisting of

a polypeptide having the sequence of amino acids 1-97 of the human alpha hemoglobin chain, and

a polypeptide having the sequence of amino acids 1-94 of the human alpha hemoglobin chain.

97. (previously presented) A method as in claim 95 wherein said INPROL is selected from the group consisting of peptides having the sequence:
Phe-Pro-His-Phe-Asp-Leu-Ser-His-Gly-Ser-Ala-Gln-Val (SEQ ID NO:1),
Cys-Phe-Pro-His-Phe-Asp-Leu-Ser-His-Gly-Ser-Ala-Gln-Val-Cys (SEQ ID NO:2)

(where the two Cys residues form a disulfide bond),
Asp-Ala-Leu-Thr-Asn-Ala-Val-Ala-His-Val-Asp-Asp-Met-Pro-Asn-Ala-Leu-Ser-Ala (SEQ ID NO:3),
Phe-Leu-Gly-Phe-Pro-Thr (SEQ ID NO:33),
Leu-Val-Val-Tyr-Pro-Trp-Thr-Gln-Arg-Phe (SEQ ID NO:4),
Leu-Val-Val-Tyr-Pro-Trp-Thr-Gln-Arg (SEQ ID NO:5),
L u-Val-Val-Tyr-Pro-Trp-Thr-Gln (SEQ ID NO:6),
Leu-Val-Val-Tyr-Pro-Trp-Thr (SEQ ID NO:7),
Leu-Val-Val-Tyr-Pro-Trp (SEQ ID NO:8),
L u-Val-Val-Tyr-Pro (SEQ ID NO:9),
Val-Val-Tyr-Pro-Trp-Thr-Gln (SEQ ID NO:10),
Tyr-Pro-Trp-Thr-Gln-Arg-Phe (SEQ ID NO:11),
Tyr-Pro-Trp-Thr-Gln-Arg (SEQ ID NO:12),
Tyr-Pro-Trp-Thr-Gln (SEQ ID NO:13), and
Tyr-Pro-Trp-Thr (SEQ ID NO:27).

98. (previously presented) The method of claim 97, comprising contacting stem cells with a stem cell proliferation stimulating amount of Phe-Pro-His-Phe-Asp-Leu-Ser-His-Gly-Ser-Ala-Gln-Val-Cys (SEQ ID NO:1).

99. (previously presented) The method of claim 97, comprising contacting stem cells with a stem cell proliferation stimulating amount of Cys-Phe-Pro-His-Phe-Asp-Leu-Ser-His-Gly-Ser-Ala-Gln-Val-Cys (SEQ ID NO:2) wherein the two Cys residues form a disulfide bond.

100-102 (canceled)